Abstract of the Disclosure

A method to locate a fault from one end of a section of a power line utilizing measurements of current, voltage and angles between the phases at a first end of said section. Symmetrical components of currents are calculated for the current and voltage measurement at the first end. A value of impedance is calculated for an extra link between the terminals with the impedance for the positive sequence equal to:

$(\underline{Z}_{1LB\&AB} = \frac{\underline{Z}_{1LB}\underline{Z}_{1AB}}{\underline{Z}_{1LB} + \underline{Z}_{1AB}})$ where:

$\underline{Z}_{1AB}$ = impedance for the positive sequence of the extra link,

$\underline{Z}_{1LA}$ = positive-sequence impedance of the healthy line.

A compensation is determined for the shunt capacitance with the aid of an equation of the form:

$B_2^{comp\_1}(d_{comp\_1})^2 + B_1^{comp\_1}d_{comp\_1} + B_0^{comp\_1} = 0$ where:

$B_2^{comp\_1} = A_{2\_Re}^{comp\_1}A_{00\_Im}^{comp\_1} - A_{2\_Im}^{comp\_1}A_{00\_Re}^{comp\_1}$

$B_1^{comp\_1} = A_{1\_Re}^{comp\_1}A_{00\_Im}^{comp\_1} - A_{1\_Im}^{comp\_1}A_{00\_Re}^{comp\_1}$

$B_0^{comp\_1} = A_{0\_Re}^{comp\_1}A_{00\_Im}^{comp\_1} - A_{0\_Im}^{comp\_1}A_{00\_Re}^{comp\_1}$.

The zero-sequence current is determined from the healthy line of a section of parallel power lines. A distance to a fault is calculated for the parallel line section. The distance to the fault from the first end is calculated using a quadratic equation of the form:

$B_2d^2 + B_1d + B_0 = 0$ where:

$B_2 = A_{2\_Re}A_{00\_Im} - A_{2\_Im}A_{00\_Re}$

$B_1 = A_{1\_Re}A_{00\_Im} - A_{1\_Im}A_{00\_Re}$

$B_0 = A_{0\_Re}A_{00\_Im} - A_{0\_Im}A_{00\_Re}$.